



This PDF file is an excerpt from the EPA sampling report entitled *Sampling Episode Report - Princess Cruise Lines - Island Princess - Sampling Episode 6505* (March 2006). The full report can be downloaded from http://www.epa.gov/owow/oceans/cruise_ships/island.html

Sampling Episode Report Princess Cruise Lines Island Princess Sampling Episode 6505

Chapter 1 Introduction

March 2006

1.0 INTRODUCTION

This Sampling Episode Report describes the Environmental Protection Agency's sampling and analysis activities to characterize graywater and sewage generation and treatment by Princess Cruises' cruise ship Island Princess (Island) while in Alaska waters. This sampling took place from August 28 through September 4, 2004, under the direction of the Engineering and Analysis Division of the Office of Science and Technology, and the Oceans and Coastal Protection Division of the Office of Wetlands, Oceans, and Watersheds of the U.S. Environmental Protection Agency (EPA).

The Island is a 88,000 gross ton cruise vessel launched in 2003. The vessel has 16 decks, a length of 964 feet, and a beam of 106 feet. The Island's maximum cruising speed is 24 knots. Its port of registry is Bermuda. During the sampling episode, the Island carried 2,019 passengers and 906 crew. The ship's itinerary was as follows:

| Date | Port |
|-------------------|-------------------------|
| August 28, 2004 | Whittier, AK |
| August 29, 2004 | Cruising College Fjord |
| August 30, 2004 | Cruising Glacier Bay |
| August 31, 2004 | Skagway, Alaska |
| September 1, 2004 | Juneau, Alaska |
| September 2, 2004 | Ketchikan, Alaska |
| September 3, 2004 | Cruising Inside Passage |
| September 4, 2004 | Vancouver, B.C. |

This sampling program is a part of EPA's data collection effort to evaluate whether to develop wastewater discharge regulations for cruise vessels authorized to carry 500 or more passengers for hire when operating in the waters of the Alexander Archipelago or the navigable waters of the United States within the State of Alaska or within the Kachemak Bay Estuarine Research Reserve (hereafter referred to as Alaska waters). Such regulations are authorized by "Title XIV - Certain Alaskan Cruise Ship Operations" of the Miscellaneous Appropriations Bill (H.R. 5666) passed by Congress on December 21, 2000, in the Consolidated

Appropriations Act of 2001 (Pub L. 106-554, Sections 1401-1414, 33 USC 1901 Note). The data and information gathered through this sampling episode were collected using EPA's authority under section 308 of the Clean Water Act, as also provided by Title XIV. Princess Cruise Lines voluntarily provided information and data gathered for and represented in this report, notwithstanding the above cited authority, in the interest of research for the improvement of wastewater treatment standards.

EPA selected the Island to characterize the performance of the Hamworthy KSE Ltd. (Dorset, England) membrane wastewater bioreactor treatment system (Hamworthy treatment system), an advanced wastewater treatment system that uses aerobic biological oxidation followed by ultrafiltration and ultraviolet (UV) disinfection. EPA will use the analytical and flow data included in this sampling episode report to evaluate the performance of the Hamworthy treatment system, and to analyze patterns and variability in wastewater sources.

Samples were collected in accordance with with procedures specified in the *Generic Sampling Plan for Large Cruise Ships in Alaska Waters* (Generic SAP) and the ship-specific *Sampling and Analysis Plan for the Island Princess* (Island SAP). The Island SAP is presented in Appendix E and the Generic SAP is available on EPA's website at http://www.epa.gov/owow/oceans/cruise_ships/GenericSAP040602.pdf. Pathogen indicator analyses were performed onboard. Samples for all other analyses were shipped to shoreside EPA-contract laboratories for analysis. Appendix D identifies all EPA-contract laboratories used in this sampling episode.

Section 2.0 of this report describes the generation, collection, and treatment of graywater and sewage on the Island, as well as the sampling point and flow meter locations used in this sampling episode. Section 3.0 describes the sample collection methods and deviations from the Island SAP. Section 4.0 presents and analyzes the analytical, flow, and shipboard data collected during the sampling episode. Section 5.0 describes the quality assurance and quality control (QA/QC) procedures and results. Section 6.0 presents references used in this document. Tables and figures referred to in the text are located at the end of each section.